

# PATENT SPECIFICATION

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416,934

Complete Left: March 12, 1934.

Complete Accepted: Sept. 24, 1934.

PROVISIONAL SPECIFICATION.

## Improvements in or relating to Oil Burning Lamps.

We, ROBERT EDWIN NEWBERY, M.A., a British subject, of Colne Lodge, Clarence Street, Staines, Middlesex, and RICHARD RUTHERFORD, a British subject, of 10, Wren's Avenue, Ashford, Middlesex, do hereby declare the nature of this invention to be as follows:—

This invention relates to oil burning lamps primarily intended for illuminating purposes and has for its object to devise improvements in the construction and arrangement of such lamps which will increase their efficiency and give an increased candle power for a given fuel consumption as compared with existing lamps without the aid of fragile articles such as mantles, refractory earth blocks and the like.

The invention consists in an oil burning wick-fed lamp characterised by a distribution of the air for combustion so that the flame is located between inner and outer air streams.

The invention also consists in a lamp according to the preceding paragraph in which the total air supply for combustion is divided into four streams or stages.

The invention further consists in a lamp of the above character in which there is an air draught induced over the surface of the fuel in the container thereby drawing odours and fumes into the flame while at the same time maintaining the container cool and obviating creeping of the flame.

The invention further consists in a lamp according to the preceding paragraphs in which the lamp chimney is provided with an inner extension tube into which the upper part of the flame is drawn thus producing a substantially onion-shaped flame giving an intense light.

Further features of the invention will be apparent from the description given hereafter.

In carrying our invention into effect in one convenient manner we form our improved oil burning lamp with any suitable container for the oil and arranged for suspension or for support upon a stand or as otherwise commonly practised in connection with oil burning lamps.

[Price 1/-]

The lamp burner is provided with a central air tube round which the wick is mounted to be adjusted by a rack and pinion or other suitable means, the air tube communicating with the fuel container by means of a flame proof gauze or perforated metal lower end and preferably having its interior divided by intersecting vertical partitions.

In the upper end of this air tube we fit a flame-spreader having a perforated body and an inner hollow cone depending from the upper plate or spreader proper, both the cone and the spreader plate being perforated and preferably with relatively staggered holes. Thus in a particular example the cone may have four apertures in its lower end while the spreader plate is furnished with six apertures near its centre and around the central screw by which it is assembled upon the cone.

Round the outside of the wick is arranged a sleeve with a small external flange extending therefrom just below the upper edge while the lower part of the sleeve is tapered outwards to seat on the main body of the burner the tapered portion being perforated and forming the main annular air supply to the burner. Surrounding this sleeve is a further sleeve having its upper edge turned slightly inwards to direct the primary air supply on to the wick, the lower part of the sleeve being in the form of a cone, seating in or formed in one with a metal sleeve having a series of perforations therein and spaced slightly apart from the lower perforated portion of the cone which provides a secondary air supply to a further sleeve surrounding the cone and seated in the groove or channel provided between the cone and the outer sleeve above referred to.

The sleeve surrounding the cone is perforated near its upper part with a series of perforations and has its upper part turned inwards to form a flattened cone whereby the secondary air supply is deflected on to the developing flame while the ring of perforations beneath the flattened cone allows a tertiary supply of air for final combustion. The arrange-

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ment is such that there are therefore two inner supplies and two outer supplies of air so that the flame is located between two sets of balanced supplies with consequent advantages which will hereinafter be referred to.

The burner is adapted to support a lamp glass or chimney of usual form but in which is suspended a metal, silica, porcelain or other heat-proof tube, the lower end of which extends to a point adjacent the burner and which is turned inwards or otherwise restricted so as to provide a venturi or choke effect.

In operation the flame is fed by four separate and distinct air supplies and the upper part of the flame is drawn into the lower part of the chimney extension tube whereby the actual flame is substantially onion-shaped.

It will be found that a lamp in accordance with the invention gives an intensely bright light for a given fuel consumption without the use of a mantle or other fragile device, is free from smell, gives a steady flickerless flame unaffected by draught or vibration, makes possible the use of low grade fuel due to the efficient

combustion provided, and renders trimming and renewal of the wick practically unnecessary or at all events an operation requiring to be performed at infrequent intervals.

It will be understood that the invention applies particularly to the burner, and it follows therefore that we may either produce a burner in accordance with the invention to be fitted to any ordinary standard lamp or we may make the lamp in toto embodying a burner in accordance with the invention.

Furthermore it will be clear that the invention is not to be limited to the particular details of construction hereinbefore given by way of illustration as we may vary the number of sleeves and cones provided to vary the number of separate air supplies and their disposition and may provide bayonet joints, screw threads or other means for assembling the parts relatively to one another depending upon any practical requirements that may have to be fulfilled.

Dated this 24th day of March, 1933.  
MARKS & CLERK.

#### COMPLETE SPECIFICATION.

#### Improvements in or relating to Oil Burning Lamps.

We, ROBERT EDWIN NEWBERY, M.A., a British subject, of Colne Lodge, Clarence Street, Staines, Middlesex, and RICHARD RUTHERFORD, a British subject, of 10, Wren's Avenue, Ashford, Middlesex, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to oil burning lamps for illuminating and/or heating purposes of the kind employing a multiple air draught and provided with a tube disposed within the lamp glass or chimney to draw the flame into a spherical or nearly spherical form.

An object of the invention is to provide an improved lamp of the above kind, and the invention consists in an oil burning wick-fed lamp or heater of the said kind and comprising an external wick-tube surrounded by a pair of sleeves, wherein the inner sleeve of said pair of sleeves extends inwardly at its upper end to direct a supply of air onto the wick and extends outwardly at its lower end to provide a support for the outer sleeve of said pair of sleeves and for a lamp glass or chimney, and is furnished with

a series of perforations intermediately of said ends to provide a supply of air to the outer sleeve, and wherein the outer sleeve of said pair of sleeves is provided with a flange at its upper end extending inwardly into close proximity to the inner sleeve and below the upper end thereof, and has a series of perforations below said flange providing a third supply of air to the outside of the flame.

Further features of the invention will be apparent from the description given hereafter.

The accompanying drawings illustrate one mode of carrying out the invention.

Figure 1 is a sectional elevation of a part of one convenient form of lamp in accordance with the invention.

Figure 2 is a similar view but on a section at right angles to that of Figure 1.

Figure 3 is a sectional elevation of a convenient form of lamp glass or chimney fitted with an internal tube, and

Figure 4 is a reverse plan of a detail.

In carrying the invention into effect in one convenient manner the improved oil burning lamp is formed with any suitable container (not shown) for the oil and arranged for suspension or for support upon a stand or as otherwise commonly

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practised in connection with oil burning lamps or heaters.

The lamp burner is provided with a central air tube *a* round which the wick *b* is mounted to be adjusted by a rack *c* and pinion *d* or other suitable means. The air tube may communicate with the fuel container by means of a flame proof gauze or perforated metal lower end and preferably has its interior divided by intersecting vertical partitions *f* *g* designed to secure uniform distribution of the air.

In the upper end of this air tube we fit a flame-spreader having a perforated body *h* and an inner hollow cone *h*<sup>1</sup> depending from the upper plate *i* or spreader proper, both the cone and the spreader plate being perforated and preferably with relatively staggered holes. Instead of making the holes in the cone these may be in the form of slots in the central screw *k* at the lower end of the cone, and in the particular example shown there are four such slots *k*<sup>1</sup> in the screw while the spreader plate is furnished with six apertures *i*<sup>1</sup> near its centre and around the central screw *k* by which it is assembled upon the cone.

Round the outside of the wick *b* is an external wick tube *v*<sup>2</sup> secured to the main body *k*<sup>2</sup> of the burner, which body is perforated at *k*<sup>3</sup> for the admission of the whole of the air supply to the burner, the supply to the central tube *a* being conducted by way of the apertures *a*<sup>1</sup>. The outer wick tube may be formed in part by a removable sleeve *v*<sup>3</sup> and surrounding the sleeve *v*<sup>3</sup> is a further sleeve *l* having its upper edge *l*<sup>1</sup> turned slightly inwards to direct a primary air supply on to the wick, the lower part of the sleeve *l* being in the form of a cone having a series of perforations *l*<sup>2</sup> therein providing a secondary air supply to a sleeve *m* surrounding the sleeve *l* and seated in the groove or channel *a*<sup>3</sup> provided at the base of the sleeve *l* for the reception of the chimney hereinafter referred to.

The sleeve *m* surrounding the cone *l* is perforated near its upper part with a series of perforations *m*<sup>1</sup> and has its upper part turned inwards to form a flattened cone *m*<sup>2</sup> whereby the secondary air supply is deflected on to the developing flame while the ring of perforations *m*<sup>1</sup> beneath the flattened cone allows the passage between the sleeve *m* and a lamp glass or chimney *n* of a tertiary supply of air, derived from the secondary air supply, for final combustion. The arrangement is such that there are therefore an inner supply and three outer supplies of air so that the flame is located between two sets of balanced supplies with consequent advantages which will hereinafter be

referred to.

The lamp glass or chimney *n* is of usual form but has suspended therein a metal, silica, porcelain or other heat-proof tube *o*, the lower end of which extends to a point adjacent the burner and which is turned inwards as at *o*<sup>1</sup> or otherwise restricted so as to provide a venturi or choke effect.

In some cases there may be provided on the sleeve *l* a stabilising ring *p* having a toothed or serrated edge and by which the edge of the flame is maintained smooth and free from points or spikes.

In operation the flame is fed by the abovementioned four separate and distinct air supplies and the upper part of the flame is drawn into the lower part of the chimney extension tube whereby the actual flame is substantially bulbous or onion-shaped.

It will be found that a lamp in accordance with the invention gives an intensely bright light and/or intense heat for a given fuel consumption without the use of a mantle or other fragile device, is free from smell, gives a steady flickerless flame unaffected by draught or vibration, makes possible the use of low grade fuel due to the efficient combustion provided, and renders trimming and renewal of the wick practically unnecessary or at all events an operation requiring to be performed at infrequent intervals.

It will be understood that we may either produce a burner in accordance with the invention to be fitted to any lamp or heater of the kind described or we may make the lamp or heater in toto embodying a burner in accordance with the invention.

Furthermore it will be clear that the invention is not to be limited to the particular details of construction hereinbefore given by way of illustration as we may provide bayonet joints, screw threads or other means for assembling the parts relatively to one another depending upon any practical requirements that may have to be fulfilled.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An oil burning wick-fed lamp or heater of the kind described and comprising an external wick-tube surrounded by a pair or sleeves, wherein the inner sleeve of said pair of sleeves extends inwardly at its upper end to direct a supply of air onto the wick and extends outwardly at its lower end to provide a support for the outer sleeve of said pair of sleeves and

- for a lamp glass or chimney, and is furnished with a series of perforations immediately of said ends to provide a supply of air to the outer sleeve, and wherein
- 5 the outer sleeve of said pair of sleeves is provided with a flange at its upper end extending inwardly into close proximity to the inner sleeve and below the upper end thereof, and has a series of perforations
- 10 tions below said flange providing a third supply of air to the outside of the flame.
2. A lamp or heater according to claim 1, wherein the flange on the outer sleeve is in the form of a flattened cone.
- 15 3. A lamp or heater according to claim 1 or 2, comprising a downwardly extending ring fixed to the outer side of the inner sleeve and below the flange on the outer sleeve, and having a serrated edge
- 20 to control the second supply of air where- by the edge of the flame is maintained smooth and free from points or spikes.
4. A lamp or heater according to the preceding claims having a flame-spreader comprising a disc with a series of aper- 25 tures therein and a hollow cone beneath the disc with apertures therein staggered in relation to the apertures in the spreader disc.
5. Improved burner substantially as 30 described and illustrated by the accompanying drawings when used in a lamp or heater of the kind described.
6. Lamp or heater of the kind described fitted with a burner substantially as 35 described with reference to the accompanying drawings.

Dated this 10th day of March, 1934.  
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[This Drawing is a reproduction of the Original on a reduced scale.]

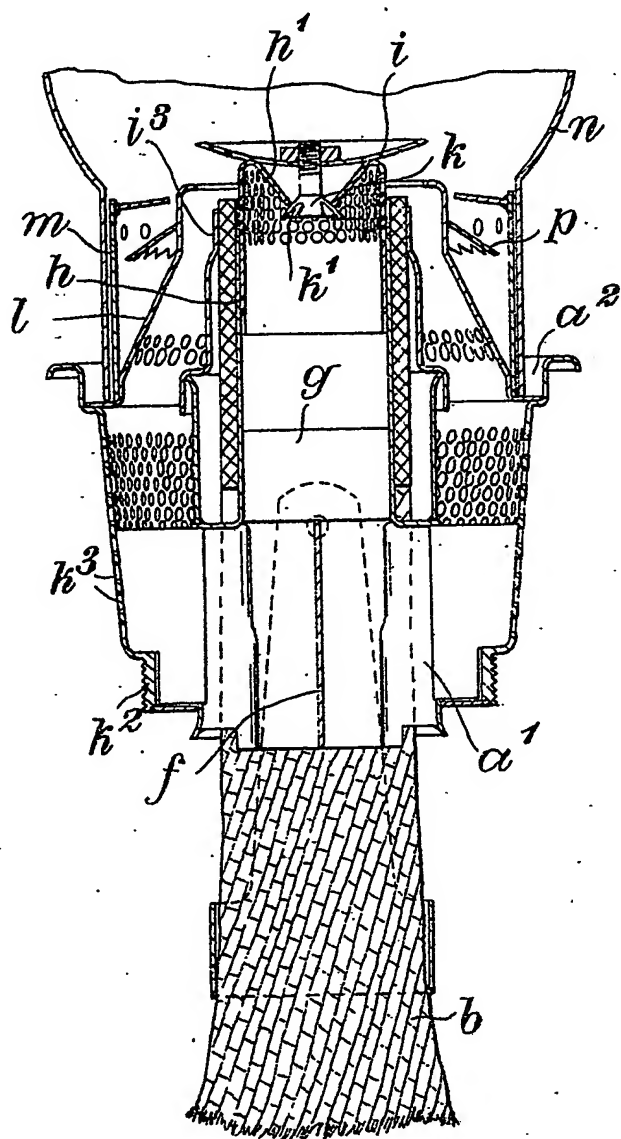


Fig. 1.

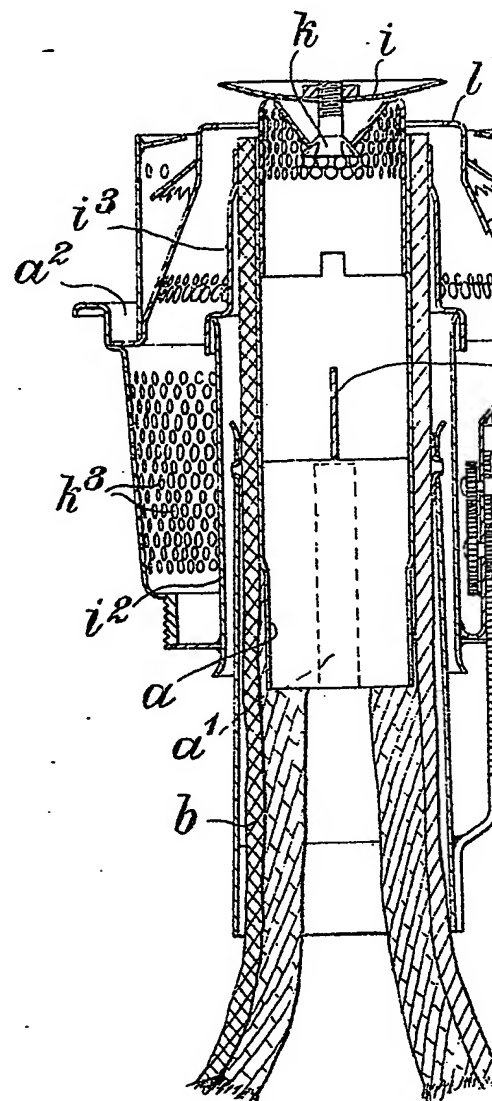


Fig. 2.

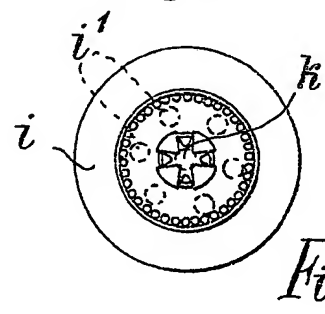


Fig. 3.

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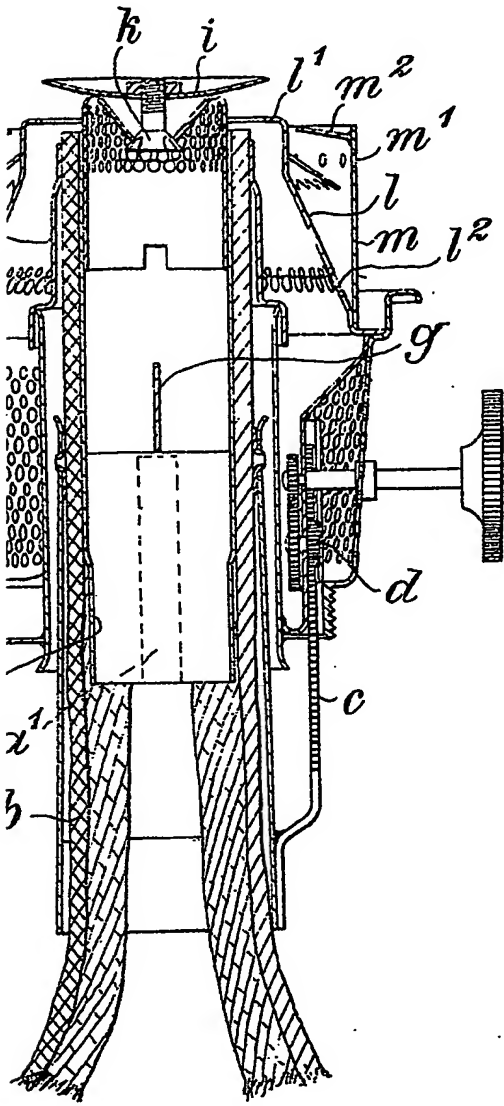


Fig. 2.

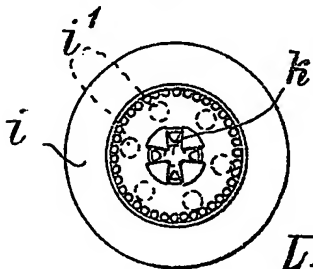


Fig. 4.

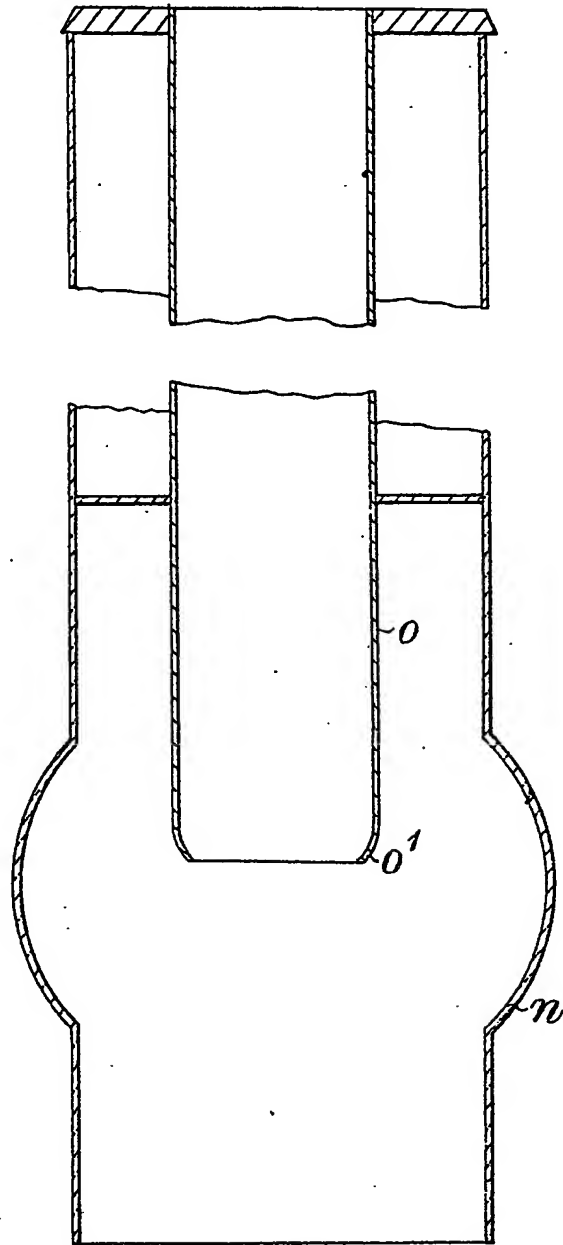


Fig. 3.

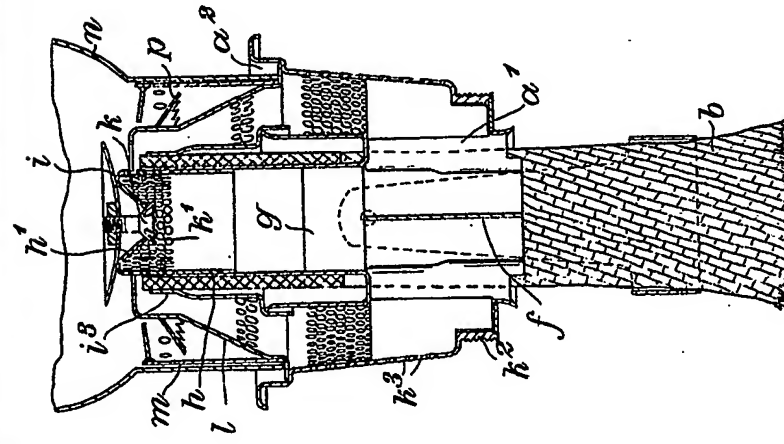


Fig. 1.

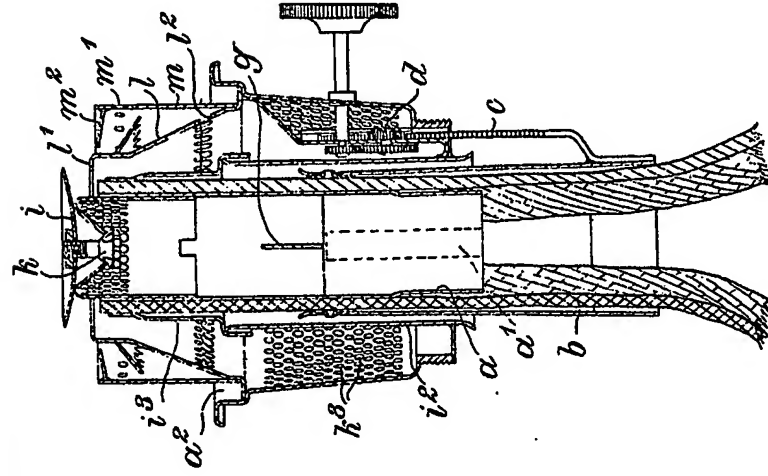


Fig. 2.

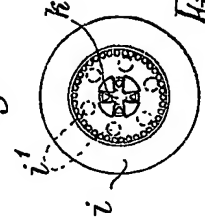


Fig. 4.

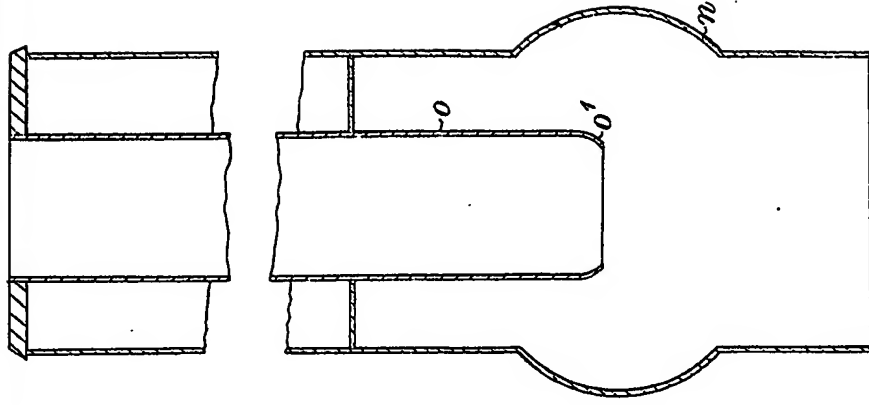


Fig. 3.

[This Drawing is a reproduction of the Original on a reduced scale.]